

ARTIFACT SHEET

Enter artifact number below. Artifact number is application number + artifact type code (see list below) + sequential letter (A, B, C . .). The first artifact folder for an artifact type receives the letter A, the second B, etc..
Examples: 59123456PA, 59123456PB, 59123456ZA, 59123456ZB

09231855 ZA
Indicate quantity of a single type of artifact received but not scanned. Create individual artifact folder/box and artifact number for each Artifact Type.

☐

CD(s) containing:

computer program listing

Doc Code: Computer

pages of specification

and/or sequence listing

and/or table

Doc Code: Artifact

content unspecified or combined

Doc Code: Artifact

☐

Artifact Type Code: P

☐

Artifact Type Code: S

☐

Artifact Type Code: U

☐

Stapled Set(s) Color Documents or B/W Photographs

Doc Code: Artifact Artifact Type Code: C

☐

Microfilm(s)

Doc Code: Artifact Artifact Type Code: F

☐

Video tape(s)

Doc Code: Artifact Artifact Type Code: V

☐

Model(s)

Doc Code: Artifact Artifact Type Code: M

☐

Bound Document(s)

Doc Code: Artifact Artifact Type Code: B

☐

Confidential Information Disclosure Statement or Other Documents marked Proprietary, Trade Secrets, Subject to Protective Order, Material Submitted under MPEP 724.02, etc.

Doc Code: Artifact Artifact Type Code: X

☒

Other, description:

Doc Code: Artifact

U.S. Priority Document
Artifact Type Code: Z

RECEIVED

MAY 2 2001

Technology Center 2600



The United States of America



The Commissioner of Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

Bruce Lehman

Commissioner of Patents and Trademarks

Pandra J. Motta

Attest

[54] **ASYNCHRONOUS PROCESSOR ACCESS TO A SWITCH TABLE IN A NETWORK WITH ISOCRONOUS CAPABILITY**

[75] Inventors: **Debra J. Worsley, Vista; Michael T. Werstein, Sunnyvale; Richard W. Thaik, San Jose, all of Calif.**

[73] Assignee: **National Semiconductor Corporation, Santa Clara, Calif.**

[21] Appl. No.: **146,336**

[22] Filed: **Nov. 1, 1993**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 969,916, Nov. 2, 1992, abandoned.

[51] Int. Cl.⁶ **H04L 12/43**

[52] U.S. Cl. **370/395; 370/513; 395/250**

[58] Field of Search **370/66-68, 85.1, 370/85.13, 85.14, 85.15, 110.1, 112, 94.3, 55, 58.1, 60, 94.2, 119; 340/825.52, 58.1; 395/250, 830, 823, 880, 550**

References Cited

U.S. PATENT DOCUMENTS

4,220,816	9/1980	Howells et al.	370/24
4,258,434	3/1981	Glowinski et al.	370/60
4,412,324	10/1983	Glowinski et al.	370/58.1
4,445,213	4/1984	Baugh et al.	370/94.1
4,530,088	7/1985	Hamstra et al.	370/110.1
4,543,652	9/1985	Amada et al.	370/66
4,547,880	10/1985	De Vita et al.	370/67
4,549,292	10/1985	Isaman et al.	370/85.15
4,577,312	3/1986	Nash	370/84
4,587,650	5/1986	Bell	340/825.05
4,637,014	1/1987	Bell et al.	340/825.05
4,759,010	7/1988	Murata et al.	370/66
4,766,590	8/1988	Hamada et al.	370/56
4,766,591	8/1988	Huang	370/60
4,845,609	7/1989	Lighthart et al.	364/200
4,954,988	9/1990	Robb	
4,959,774	9/1990	Davis	364/200
4,961,188	10/1990	Lau	370/94.2

4,985,891	1/1991	Fujiwara et al.	370/110.1
5,001,707	3/1991	Kositpaiboon et al.	370/94.1
5,014,247	5/1991	Albachten, III et al.	365/230.05
5,084,872	1/1992	Le Cucq et al.	370/85.1
5,146,455	9/1992	Goke et al.	370/66
5,163,148	11/1992	Walls	395/600
5,283,786	2/1994	Hoff et al.	379/85.13

OTHER PUBLICATIONS

Integrated PBX Systems, An NCC State of the Art Report, The National Computing Centre Limited, 1987.

ISDN Basic Rate Interface System Design Guide, Telenetworks document, Aug., 1989.

ISDN Primary Rate Interface System Design Guide, Telenetworks, document, Jul., 1989.

IEEE 802.3 Draft Supplement to IEEE Std 802.3 CSMA/CD Access Method and Physical Layer Specifications, Institute of Electrical and Electronics, Nov., 1989.

(List continued on next page.)

Primary Examiner—Benedict V. Safourek

Assistant Examiner—Chau T. Nguyen

Attorney, Agent, or Firm—Limbach & Limbach LLP

[57]

ABSTRACT

A data communication system, such as a local area network, is provided with a capability of transmitting isochronous data. Preferably the system conveys both isochronous data and non-isochronous data by time-multiplexing the data into a recurring frame structure on a four-bit nibble basis. Switching of data is handled using switching tables. The tables can be updated by a processor. Updates can be performed asynchronously so that the processor does not have to wait until the switch tables are in an unused updatable state before outputting the update information. An efficient encoding scheme permits transmission of both isochronous and non-isochronous data over existing media, such as twisted pair, without degrading bandwidth previously achieved for non-isochronous data over the same media, such as using an Ethernet system. The arriving data is de-multiplexed at the hub into separate channels for handling the separate streams by appropriate hardware.

18 Claims, 19 Drawing Sheets

